Conclusions: CAS can be performed in elderly patients without higher risk than in younger patients. But good indications, a meticulous technique, protection devices are mandatory and some technical points must be pointed out to avoid neurological complications and failures.

TCT-556

Optical Coherence Tomography in Carotid Artery Stenting: Feasibility and Safety

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Background: Optical coherence tomography (OCT) is an optical signal acquisition and processing method that captures micrometer-resolution, three-dimensional images from within optical scattering media that has a higher homoaxial resolution than intravascular ultrasound. Currently, characterization of carotid atherosclerotic disease is based on the anatomic degree of stenosis; however, imaging technologies such as OCT can be a useful adjunct to provide additional information in characterizing carotid atherosclerotic disease and guiding therapeutic interventions without increasing perioperative morbidity or mortality.
Methods: We evaluated 60 consecutive patients (35 men; mean age 75 ± 4 years) undergoing protected carotid artery stenting (CAS) since OCT was available in our lab (November 2011). 27 of these 60 patients underwent CAS utilizing OCT evaluation and guidance; the remainder underwent CAS without OCT guidance. Our purpose is twofold: (1) to present the first published US experience (and largest experience globally) utilizing OCT to guide CAS from a safety and feasibility standpoint and to demonstrate that OCT does not increase procedure time or perioperative morbidity or mortality; and to (2) highlight 3 substantive cases to explain challenges in image acquisition, image interpretation, and using images to guide interventional strategy.
Results: No procedural or in-hospital neurological complications occurred in either group (stroke/death 0%). The total amounts of contrast and fluoroscopic time/dose did not vary significantly between those patients undergoing OCT-guided CAS or CAS without OCT guidance. OCT images revealed innovative features such as rupture of the fibrous cap, plaque prolapse, large lipid pool, and stent malapposition in a high percentage of patients; these findings were then used to guide intraoperative decision-making.
Conclusions: Intravascular OCT during CAS appears to be feasible and safe. We have established a protocol to successfully, consistently and safely obtain images that may subsequently be used to guide interventional decision-making with the ultimate aim of improving short and long-term outcomes.

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Carotid Artery Stenting with Double Cerebral Embolic Protection in Symptomatic Patients

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Background: Previous trials comparing carotid artery stenting (CAS) with carotid endarterectomy (CEA) demonstrated controversial results, mainly in symptomatic patients, because of higher stroke rate. However, the increase of the experience of the operators, the improvement of the stents and of the embolic protection devices (EPD) has made CAS a highly competitive procedure. In this study we tried to assess the feasibility and the safety of using double EPD (proximal and distal) in high-risk patients.
Methods: We collected data about all consecutive patients with symptomatic or asymptomatic carotid artery stenosis who underwent CAS and analyzed clinical and procedural characteristics as well as immediate and 30-day outcomes. All the procedures were performed after discussion of the cases and after reviewing imaging examination results with neurologists. Neurologic visits and duplex scans were scheduled 24 hours and 1 month after the procedure.
Results: Between November 2007 to March 2014 277 underwent CAS. In 26 of them (9.4%) double EPD was used (distal filter + MoMa, Medtronic, Minneapolis, MN). The whole population was at high cardiovascular risk: 51.9% of the patients had known coronary artery disease, 5.8% congestive heart failure, 41.9 % aged ≥75 years. Many patients (48.7%) had a complex plaque (soft, ulcerated, with thrombus). The stent implanted were closed-cell in 64.6%, hybrid in 23.5% and open cell in 11.9%. In comparison with the patients treated with single EPD, those with double EPD presented with a higher rate of complex plaque (100% vs 43.4%, p< 0.0001). There was no difference between the 2 groups in primary success (100% vs 96.4%, p=0.16) and in the rate of major complications at 30 days: death (0% vs 0.7%, p=0.45), major stroke (0% vs 0.8%, p=0.45), and minor stroke (0% vs 1.2%, p=0.66).
Conclusions: In our experience, in symptomatic patients with high-risk lesions, the use of double EPD (proximal and distal) is safe and effective in minimizing the risk of cerebral embolization.

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Abstract Withdrawn

TCT-559

The Link Between S100β And Audio-Verbal Memory Performance In Patients After Carotid Revascularization

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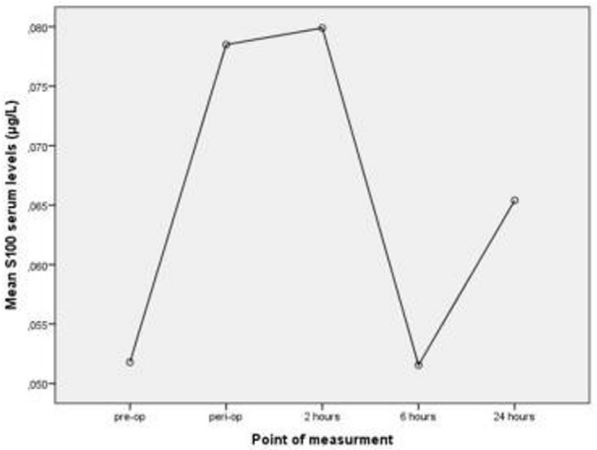
Background: S-100β has shown to be a sensitive marker of clinical and subclinical cerebral damage, such as stroke and mild traumatic brain injury. In this study we try to reveal the link between S100B and postoperative cognitive impairment in patients undergoing carotid revascularization by using the audio-verbal learning test (AVLT). The AVLT has shown to be a sensitive measure for cognitive changes following carotid revascularization.
Methods: Blood samples were taken in 31 patients undergoing carotid revascularization (15 carotid endarterectomy, 6 carotid stenting (CAS) with filter protection device, and 10 CAS with flow reversal) pre-operatively, peri-operatively, and 2, 6, and 24 hours postoperatively. The serum S100β was measured using S100 Cobas®. All patients were cognitively tested one month postoperatively.
Results: For S100β, repeated measures show significant within subjects differences (ANOVA F=19,64, p< 0,001 (see Figure 1). Because the two hours postoperative S100β resulted in the highest peak value, this measure was used to correlate to AVLT measures. There was no relation between the sum of the five encoding trials (r=-0,172, p=ns.), but the long-term recall showed a non-significant trend (r=-0,338, p=0,078). Higher S100β values are associated with lower long-term audio-verbal memory scores.



Conclusions: In this study S100β follows the typical increase early postoperatively, as shown in other studies. The magnitude of this increase seems marginally correlated to memory performance one month postoperatively. S100β may therefore have a predictive value for longer lasting cognitive impairments.

TCT-560

Transradial and Transbrachial Arterial Approach for Simultaneous Carotid Angiographic Examination and Stenting Using Catheter Looping and Retrograde Engagement Technique

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Background: The purpose of this study was to introduce a novel and safe technique with high procedural success for carotid artery stenting (CAS).
Methods: From April 2004 to May 2009, 161 patients underwent CAS using either a high transradial arterial approach (TRA, defined as 10 cm above styloid process) or a transbrachial arterial approach (TBA) with a 7F arterial sheath. Selective carotid angiography was performed using a 6F Kimny guiding catheter and Teflon wire (260 cm in length) by Catheter Looping And Retrograde Engagement Technique (CLARET) with the guiding catheter seated on the right coronary cusp and its tip engaged into the common carotid artery (CCA). Teflon wire was introduced into the CCA again after the diagnostic procedure, followed by replacement of the 6F Kimny guiding catheter by a 7F Kimny catheter for CAS using one of the following techniques: (1) direct-engagement method, i.e., from right innominate artery into the right CCA; (2) looping method plus double-wire technique (utilized two Teflon wires to provide an adequate support) for both the right and left CCA; and (3) looping method plus a PercuSurge balloon anchoring at the external carotid artery.
Results: This distinctive technique offered 100% diagnostic success and 99.4% CAS success. Two patients (1.2%) experienced major ischemic stroke after CAS and two (1.2%) died during hospitalization.
Conclusions: The results of the present study showed that high TRA/TBA using CLARET for CAS in patients with severe carotid artery stenosis is safe and technically feasible with an extremely high success rate.